



# **Overview of the 2<sup>nd</sup> Quarter 2007 Surveillance and Maintenance Report for the DOE LM Rocky Flats Site**

Rocky Flats Stewardship Council

November 5, 2007



# Surface-Water Monitoring and Operations

2<sup>nd</sup> Quarter 2007



George Squibb, S.M. Stoller



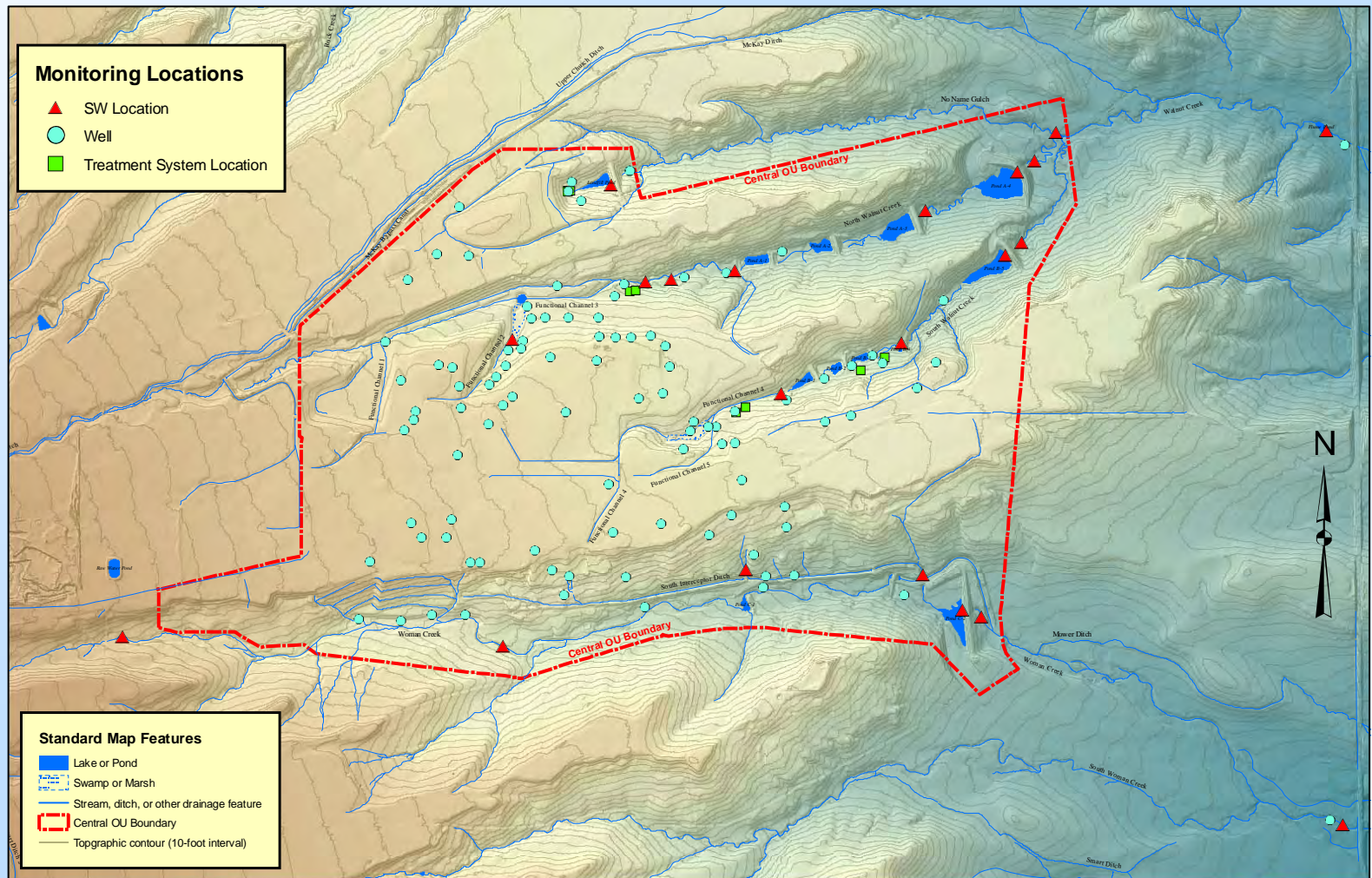


# 2CQ07 Environmental Monitoring Locations

Surface Water Locations: 21

Groundwater Wells: 100

Treatment System Locations: 10





# Pond Operations – 2<sup>nd</sup> Quarter CY07

- Terminal Pond Discharges
  - None
- Transfers
  - A-3 to A-4
    - 4/25-5/4; 7.47 MG
- Pond Levels
  - As of 6/30/07 Ponds A-3, A-4, B-5, C-2, and the Landfill Pond were holding approximately 35.6 MG (35.9% of capacity)



## Current Pond Levels (10/30/07)

- Landfill (21.7%)
- A-3 (15.7%)
- A-4 (9.6%)
- B-5 (22.3%)
- C-2 (14.7%)





# Hydrologic Data – 2<sup>nd</sup> Quarter CY07

- Precipitation
  - 4.44” total precipitation
  - 81% of WY93-06 average
- Flow Rates (percent of average)
  - GS01 (289%)
  - GS03 (12%)
  - GS10 (48%)
  - SW027 (22%)
  - SW093 (44%)





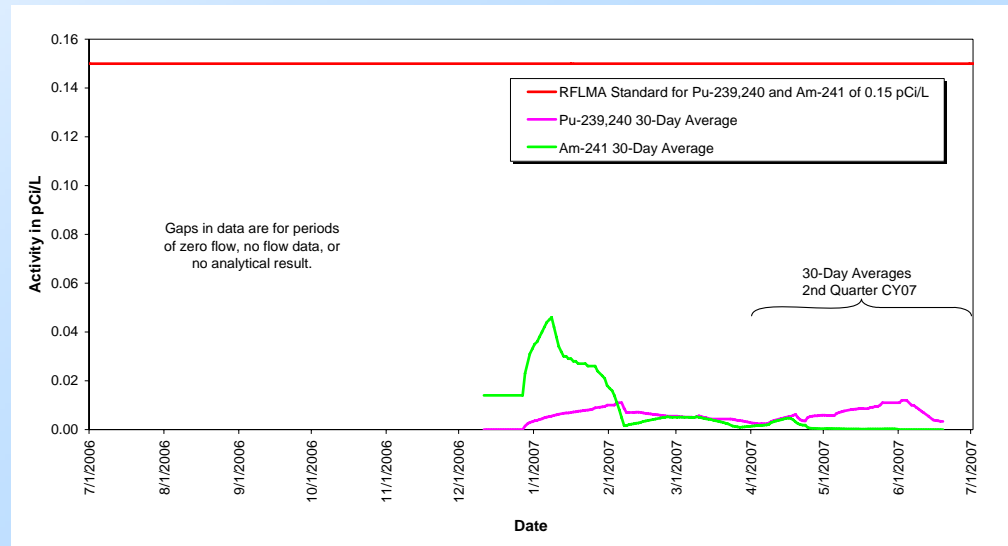
# Point of Compliance (POC) Monitoring – 2<sup>nd</sup> Quarter CY07

- Monitoring at RFCA POCs has continued uninterrupted since 10/1/96
  - GS01: Woman Cr. At Indiana Street
  - GS03: Walnut Cr. At Indiana Street
  - GS08: Pond B-5 Outlet
  - GS11: Pond A-4 Outlet
  - GS31: Pond C-2 Outlet
- All water-quality data at the RFCA POCs remain below the applicable standards using all available data

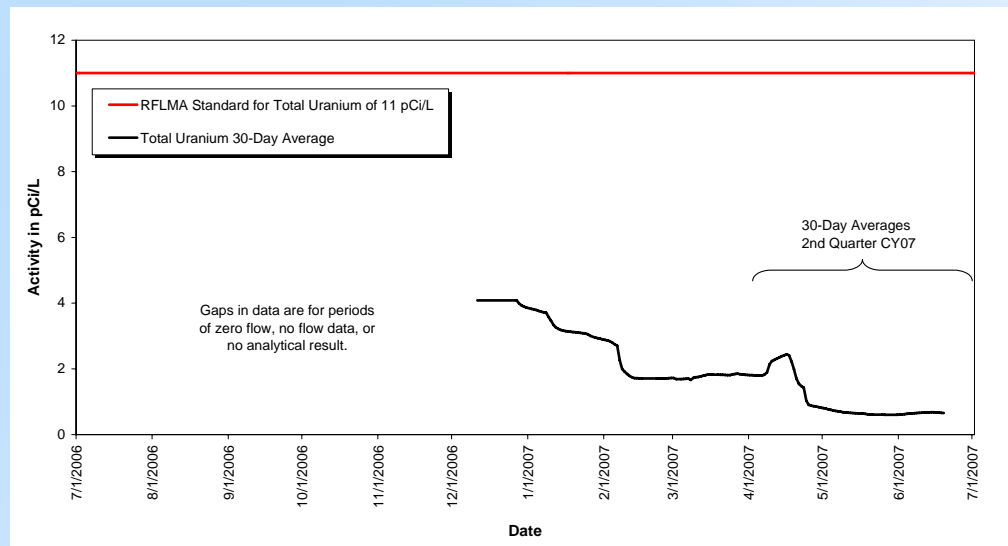


# POC GS01

- Plutonium and Americium



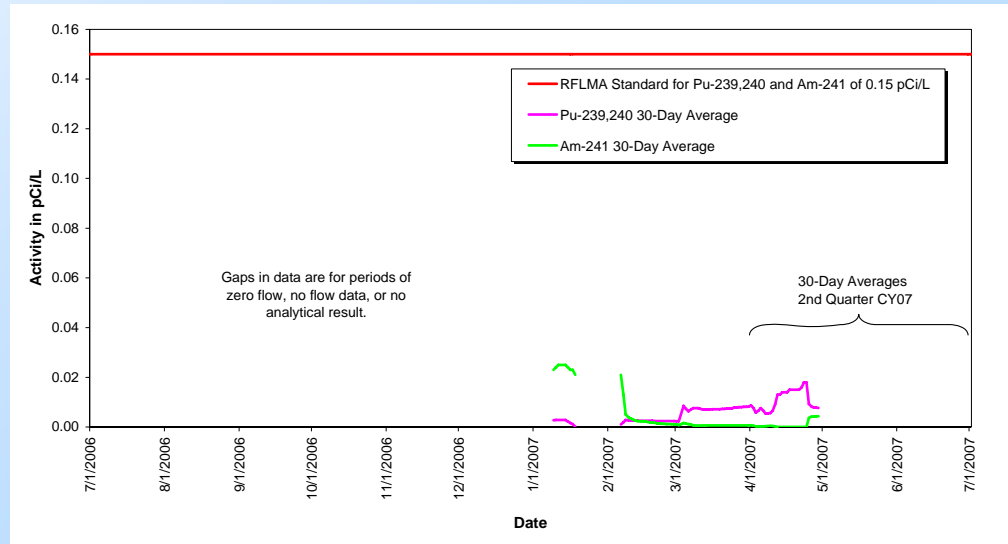
- Total Uranium



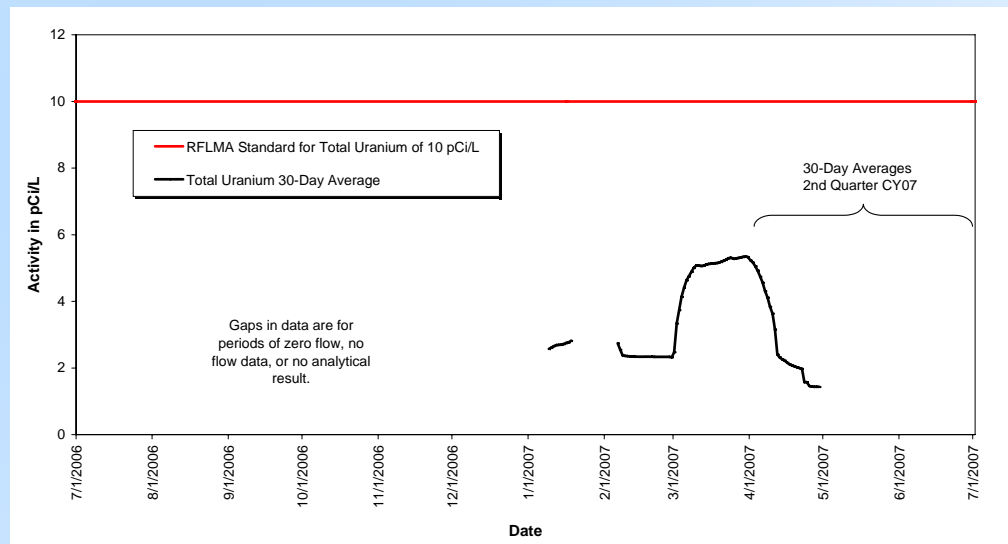


# POC GS03

- Plutonium and Americium



- Total Uranium



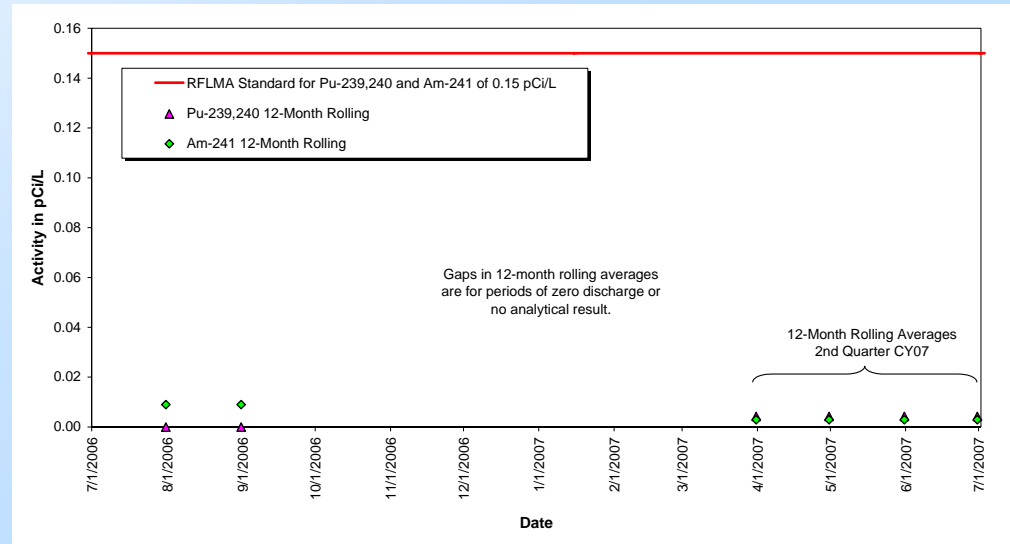
Compliance plots for nitrate+nitrite are not presented since 30-days of nitrate-nitrite sampling data have not been collected



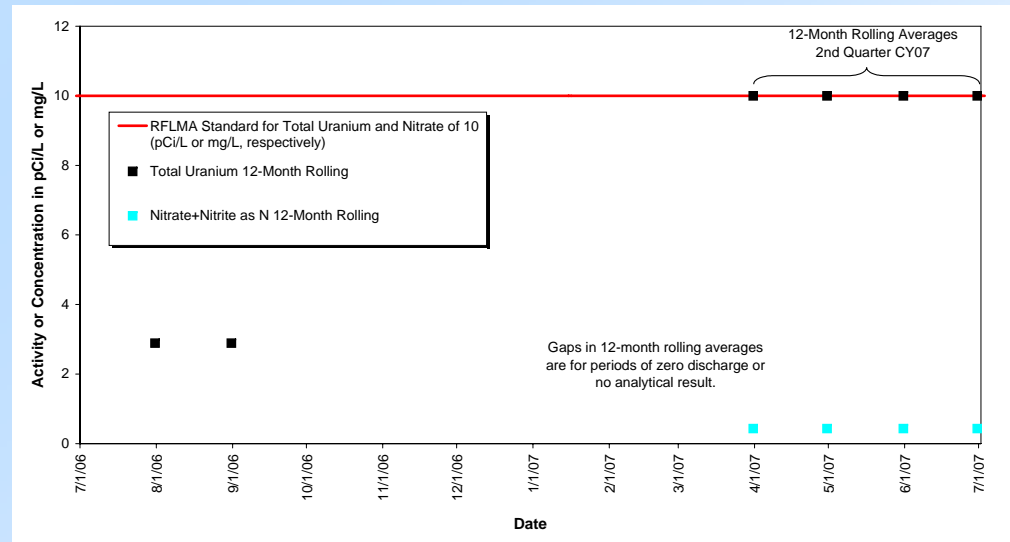


# POC GS08

- Plutonium and Americium



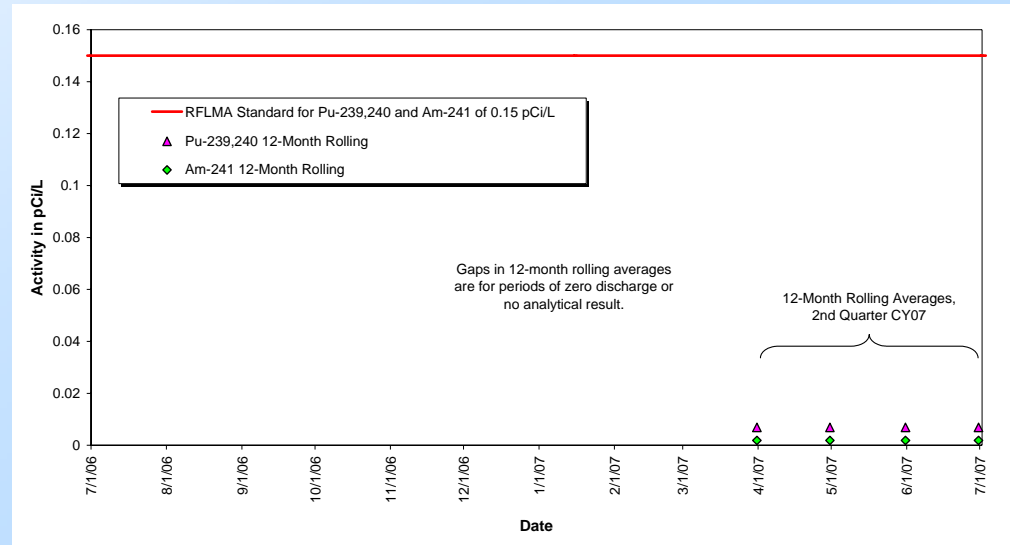
- Total Uranium and Nitrate + Nitrite as N



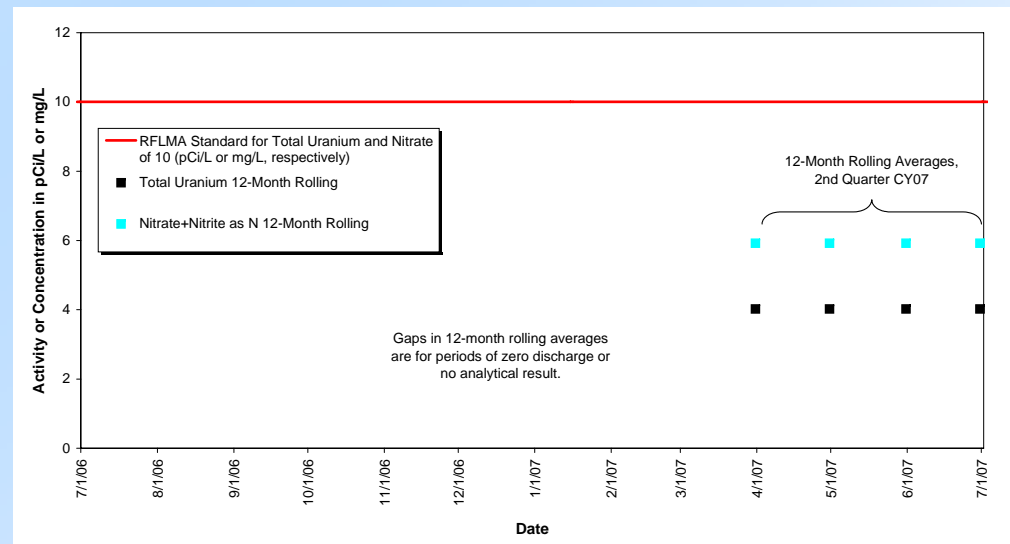


# POC GS11

- Plutonium and Americium



- Total Uranium and Nitrate + Nitrite as N





# POC GS31

- Plutonium and Americium

No Pond C-2 discharge during the last 12 months.

- Total Uranium



# Point of Evaluation (POE) Monitoring – 2<sup>nd</sup> Quarter CY07

- Monitoring at RFCA POEs has continued uninterrupted since 10/1/96
  - GS10: S. Walnut Cr. Above B-Series Ponds
  - SW027: S. Interceptor Ditch Above Pond C-2
  - SW093: N. Walnut Cr. Above A-Series Ponds
- Reportable 12-month rolling averages for uranium were observed at POE GS10 for April 2006 through June 2007; an updated source evaluation summary is presented in the 2CQ07 Report
- All other water-quality data at the RFCA POEs remain well below the applicable action levels using all available data





## Performance Monitoring – 2<sup>nd</sup> Quarter CY07 Original and Present Landfills

- Original Landfill: Surface-water quality results indicate remedy functioning properly
- Present Landfill: Surface-water quality results triggered monthly sampling for selenium and vinyl chloride
  - Three consecutive months of vinyl chloride above the standard (PQL) has triggered sampling of the Landfill Pond
  - The Site is consulting with the regulators





# Questions?







# Ground Water Monitoring

## 2<sup>nd</sup> Quarter 2007



John Boylan

SM Stoller

*Photo taken Oct. 9, 2007*



# Routine GW Monitoring

- AOC wells & SW018
  - Boundary wells
  - Sentinel wells
  - RCRA wells
  - Treatment system locations
- 
- With two exceptions, results will be evaluated in 2007 Annual





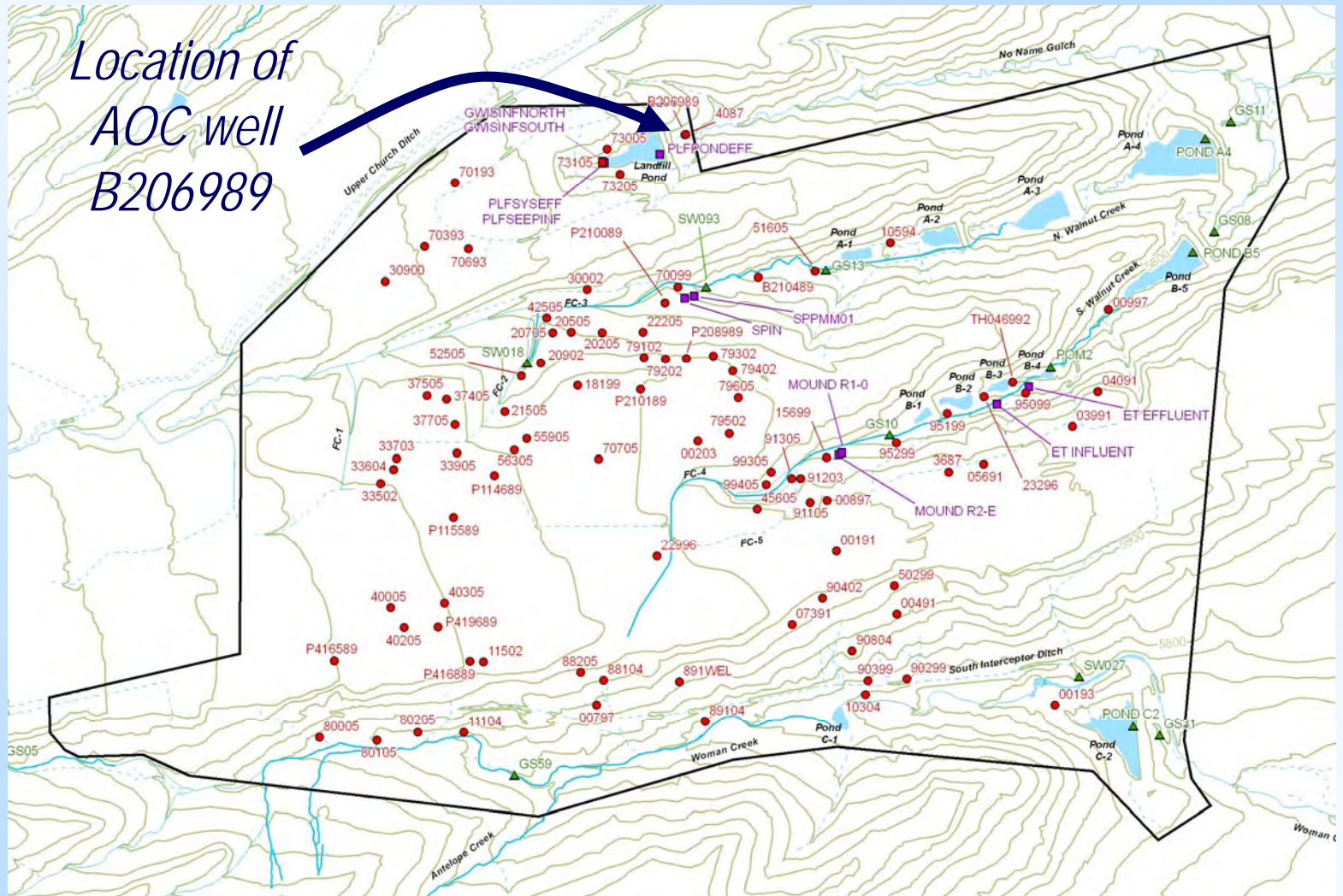
## Routine GW Monitoring, cont'd

- Reportable condition at AOC well B206989
  - Reportable condition at an AOC well is defined in the RFLMA, Attachment 2, Figure 7
  - Occurs when 2 consecutive routine results from an AOC well exceed applicable standard or threshold
- Seasonal-Kendall trend plots prepared for Sentinel wells (see report)



# Routine GW Monitoring, cont'd

*Location of  
AOC well  
B206989*





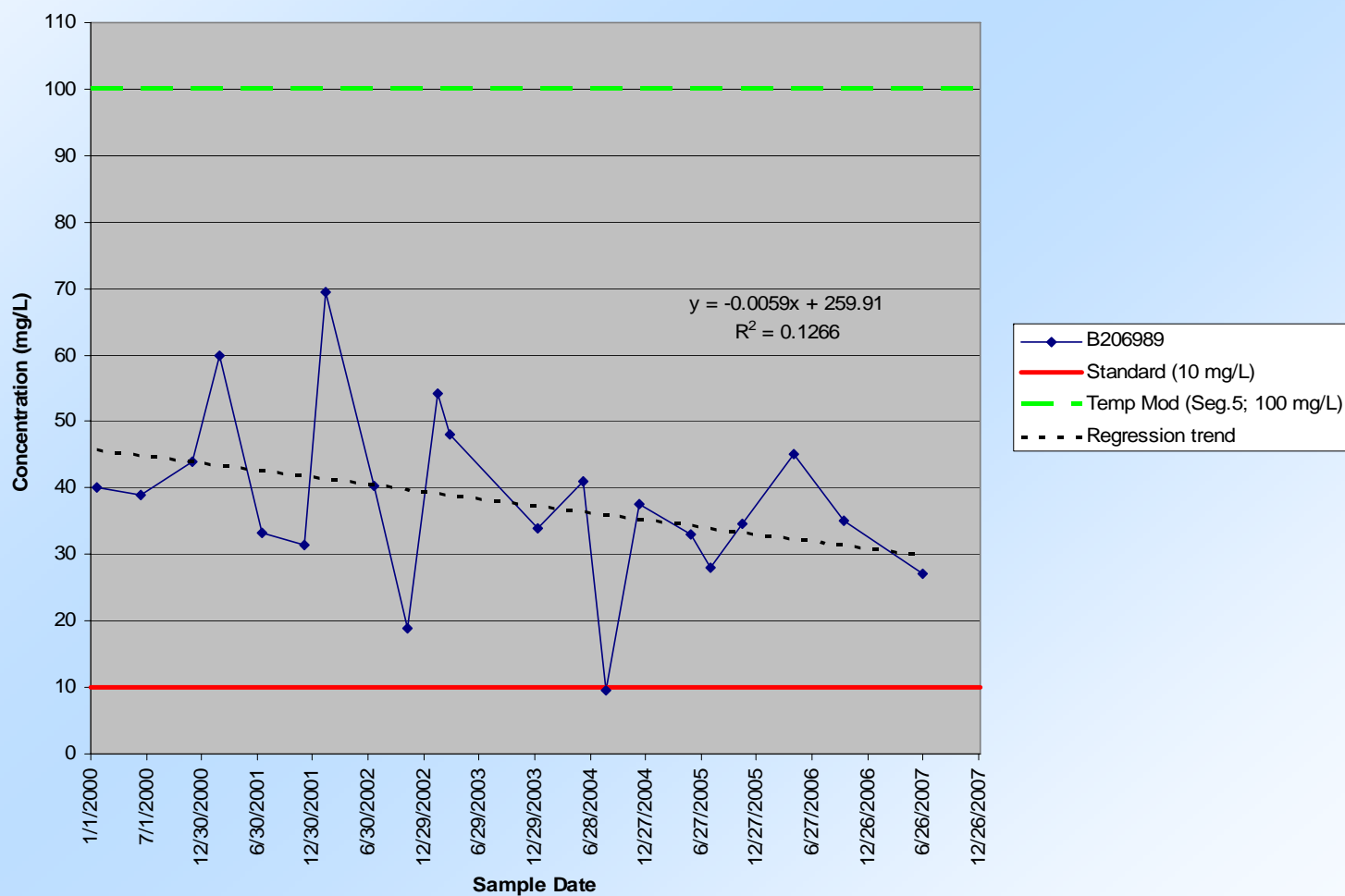
## Routine GW Monitoring, cont'd

- B206989 background
  - Was Sentinel well until RFLMA was signed (March 14, 2007)
  - Reclassified as AOC well
  - Consistently contains elevated concentrations of nitrate; RI/FS listed this well (then Sentinel) as exceeding nitrate standard
  - Sample from 2<sup>nd</sup> quarter 2007 accepted as confirmation of reportable condition
  - Preliminary trending suggests decreasing concentrations



# Routine GW Monitoring, cont'd

Regression trend plot for nitrate in well B206989





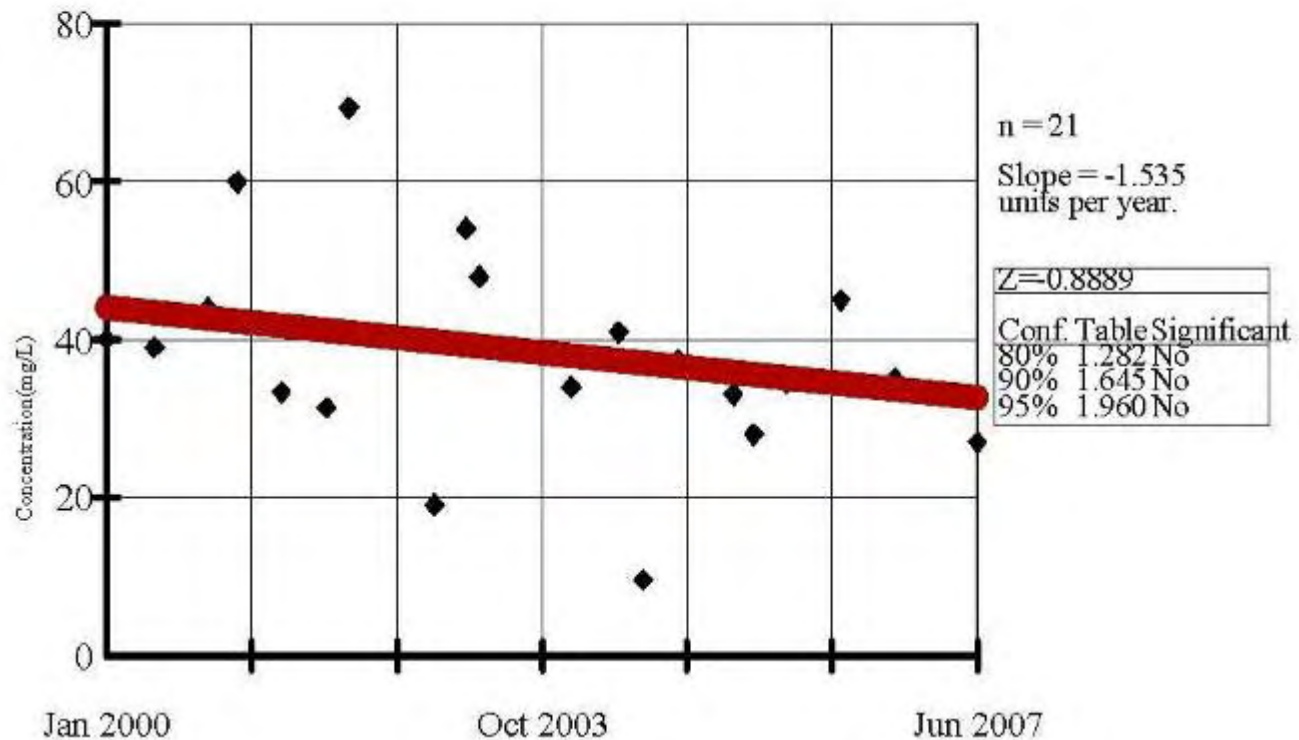


# Routine GW Monitoring, cont'd

## Seasonal-Kendall trend plot for nitrate in well B206989

v.8.7.009. For the statistical analyses of ground water by SM Steller only. EPA

### SEASONAL KENDALL SLOPE ESTIMATOR B206989





## Routine GW Monitoring, cont'd

- Consultation is underway on AOC well B206989
- Results will be posted to LM website and included in 2007 annual report



# Additional GW Monitoring

- Evaluation wells in areas that may be subject to more rapid changes in water quality
  - Due to application of HRC
    - 18199 (IHSS 118.1, a.k.a. carbon tet plume)
    - 91105 (Oil Burn Pit #2)
    - 00191, 07391 (903 Pad/Ryan's Pit)
  - Due to removal of impervious surfaces
    - 33502, 33604 (Oil Burn Pit #1, a.k.a. vinyl chloride plume)
  - To track effects from repairs on SPPTS
    - 51605
- Will be evaluated in 2007 Annual Report







## Additional GW Activities

- Maintenance and performance checks at ground water treatment systems
  - VOCs in effluent at MSPTS (daughter products cis-1,2-DCE, vinyl chloride; new since pre-closure modifications; reflects input from Oil Burn Pit #2) and ETPTS (consistent with previous conditions)
  - Reduced flow at MSPTS to increase residence time
    - Not sustainable (rising water levels in trench, cells)
  - Reconfigured MSPTS and ETPTS to upflow
    - Data are being collected
- Evaluations will be included in 2007 annual report



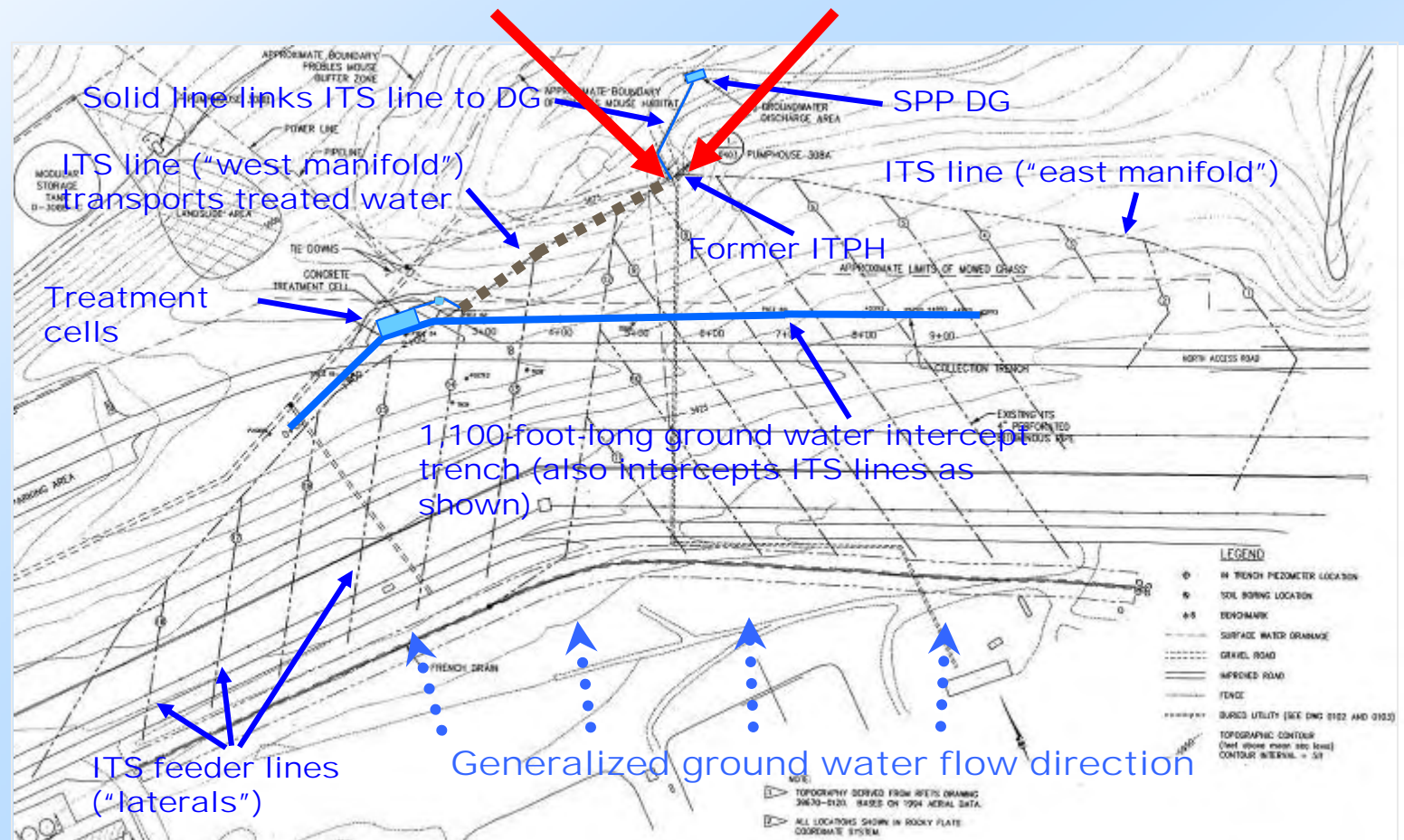
## Additional GW Activities, cont'd

- SPPTS Treatability Study
  - Focusing on nitrate treatment
  - Concluded in September 2007
  - Report will be finalized and included in 2007 annual report
- SPPTS Discharge Gallery (DG) investigation
  - Flume installed at DG to measure flow
  - Excavated, estimated flow, and sampled 2 locations plus DG
    - ITS west manifold at DG connection
    - ITS east manifold at ITPH foundation
  - Will be evaluated in 2007 annual report



# Additional GW Activities, cont'd

## SPPTS DG investigation pot-holing targets





## Additional GW Activities, cont'd

- Ground water modeling
  - Updating several post-closure models
    - IA VOC Flow Model
    - OLF Model
    - Mound Flow Model
  - Resulting letter reports will be included in 2007 annual report
  - Summary discussion will be provided to interested LSO staff in upcoming technical meeting





# Questions?



*Photo taken Oct. 16, 2007*





# Update on Water Quality Control Commission Activities

Rick DiSalvo

SM Stoller



- Water Quality Control Commission Rulemaking
  - Petition to adopt statewide basic uranium standard (MCL 30ug/L ~ 20 pCi/L): Hearing 1/09
    - Natural U in Ground Water now higher proportion of Surface Water (LANL samples pending)
    - Eliminate site specific standards (10 pCi/L Walnut Creek; 11 pCi/L Woman Creek)
  - Expiring Temporary Modifications (TM) Review (New rule): Hearings 12/07 and 12/08
    - No changes to current Rocky Flats TMs proposed by CDPHE



- Triennial Review S. Platte River Basin
  - Issues Scoping Hearing 10/07
    - Rocky Flats TMs expire 12/31/09
    - New statewide basic standard for arsenic (10 ug/L) below site specific standard (50 ug/L)
    - Will CDPHE adopt new EPA method for copper or other metals?
    - Uranium petition already scheduled for rulemaking
  - Issues Formulation Hearing 11/08; Rulemaking Hearing 6/09
- Progress for each rulemaking will be summarized in 2007 Annual Report



# Ecological Monitoring

**2nd Quarter  
CY2007  
(April – June)**

**By Jody Nelson**







# Regulatory Items

- The Water Measurement Flume Replacement Project USFWS mitigation monitoring requirements were completed. A letter was received from the USFWS on May 17, 2007 that stated the mitigation was complete.
- Monthly vegetation surveys on the OLF and PLF were completed as required under the M&M Plans.
- A contact record was submitted to the CDPH&E after three deer were killed on the new COU fence. After the placement of fence flags on the fence no further incidences have been recorded.
- Project support was provided during planning of the upcoming Roads III project, FC1/B371 excavation/fill project, Solar Ponds Potholing project, and the annual dam mowing and riprap spraying project



# Revegetation/Erosion Control

- Erosion control surveys were continued for evaluation in Preble's mouse mitigation areas and other revegetation locations.
- Several areas were reseeded by hand/ATV broadcasting to improve the stand of vegetation at these locations.
- Several small fixes to the erosion controls were made at various locations as needed.





# Noxious Weed Control

Approximately 405 acres of native grassland and revegetation areas were sprayed in during the 2<sup>nd</sup> quarter of 2007 to control noxious weeds. Weeds treated include: diffuse knapweed, Scotch thistle, Canada thistle, common mullein, musk thistle, Russian knapweed, kochia, Russian thistle, yellow sweet clover, and tall mustard. Additional locations may be treated this fall. Treatment location maps and additional information will be included in the Annual Report.





## Weed Monitoring/Control

- Weed mapping was conducted for dalmatian toadflax. Additional populations of other weeds such as Scotch thistle, whitetop, and tamarisk have been mapped where observed or in selected revegetation areas.
- Spot control was conducted on several small populations of some of the above listed species as needed.





# ATV mower modifications

- Modifications were being made to the ATV mower to increase the mowing height so that rocky areas at the Site could be mowed for vegetation management activities.





# Wetland Plantings

- During the 2<sup>nd</sup> Quarter approximately:  
670 coyote willow,  
7 plains cottonwood,  
50 chokecherry,  
50 native plum,  
50 golden currant,  
50 wax currant,  
50 peachleaf willow  
were planted at various  
wetland mitigation locations.
- Additional reseeding of wetland  
species was also conducted  
as needed at several small wetland  
areas.





# General Monitoring/Field Activities

- GIS sample locations were generated for revegetation, Preble's mouse, and wetland monitoring to be conducted during the 3<sup>rd</sup> quarter.
- Photo monitoring was conducted at the new revegetation locations that were done in early 2007 to document the establishment of the vegetation using the soil amendments.
- Several Core Function Analyses (CFA)/Job Safety Analyses (JSA) were updated for the various ecology field activities.







# Wildlife Monitoring

The annual boreal chorus frog vocalization survey was conducted on evening of April 28. Frogs were found at 16 of the 20 monitoring locations. In addition to the boreal chorus frogs, a large population of Woodhouse's toads were found near one of the locations. Further analysis of the data will be conducted and the results will be presented in the Annual Report.







# Site Operations and Maintenance 2<sup>nd</sup> Quarter 2007





# Site Operations

- **Present Landfill**

- Inspections performed April 25, May 23, June 27
- Vegetative cover inspected April 25, May 15, June 11
- April 25<sup>th</sup> inspection was done after 1.5” rainfall event
- Followed prescribed checklist in Monitoring and Maintenance Plan (May 2006)
- **No significant concerns**





# Site Operations

- **Present Landfill - Settlement Monuments**
  - Installed in August 2006
  - 9 monuments across top of landfill
  - 6 monuments on east face of landfill
  - Monuments were surveyed in March and June 2007
    - Movement within calculated settlement data per M&M Plan





# Site Operations

- **Original Landfill**

- Inspections performed April 18 and 25, May 23, June 27
- Veg cover inspected April 25, June 15, May 23
- April 25<sup>th</sup> inspection was done after 1.5” rain event
- Followed prescribed checklist in Monitoring and Maintenance Plan (Feb 2006)







# Site Operations

- **Original Landfill**
  - Seeps #4 and #7
    - Both active in 2nd Quarter
    - Directed flow along Berm #3







# Site Operations

- **Original Landfill**
  - West Perimeter Ditch slump
    - Extended South to Berm #3
    - Continuous Monitoring for additional movement





# Site Operations

- **Original Landfill**

- **Berm #1 Slump**

- Filled and compacted March 14 to April 12 with 120 tons of Rocky Flats Alluvium
    - Cracked second time on May 7th
    - Filled and compacted May 9 and 10 with 38 tons of Rocky Flats Alluvium





# Site Operations

- **Original Landfill - Settlement Monuments**
  - 5 monuments installed in March 2007
  - Settlement Monument G installed in April 2007
  - First survey June 2007





# Site Operations

- **Wattle Replacement Project**
  - Replaced wattles across OLF cover May 29 to June 4
- **OLF Berm Survey**
  - Surveyed crests and troughs of berms on OLF April 30







# Site Operations

- **Routine Site Inspections**

- Fences and Postings
- Site Markers and Monuments
- Monitoring Locations
- Landfills
- Ponds and Surface Water Features
- GW Treatment Systems
- Revegetation Areas







# Site Operations

- **Perimeter Fence Maintenance and Construction**
  - Fence repairs along Indiana Street May 2007
  - Driver hit fence along Hwy 128 April 24, fence repaired April 25
- **COU Fence Maintenance and Construction**
  - Inspected April 2007 to determine areas where deer commonly cross
  - Hung fence flags in high traffic areas May 2007



# Site Operations

- **Road Upgrades**

- Road Band-Aid Project

- Uninterrupted travel through spring months
- Started March 21 and completed April 3

- A Series Pond Road Repair

- Road damage from 1.5” rain event on April 25
- Re-graded road and constructed water management structure May 22 to June 1





# Site Operations

- **Access/Security**

- Restricted surveillance patrols to outer perimeter roads
- No significant concerns





# Site Operations

Questions ?

